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Claims

- 1. A pharmaceutical composition comprising
 - a) at least one fragment of a polynucleotide;
 - b) at least one antigen; and optionally
 - c) a pharmaceutically acceptable carrier and/or diluent.
- 2. The pharmaceutical composition according to claim 1 characterized in that the polynucleotide (a) comprises the sequence of a binding site for transcription factors or a part thereof or the sequence which is complementary to said binding site for transcription factors or a part thereof.
- 3. A pharmaceutical composition comprising
 - (a) a polynucleotide or an oligonucleotide comprising the sequence of a binding site for transcription factors or a part thereof or a polynucleotide or an oligonucleotide comprising a sequence which is complementary to said binding site for transcription factors or a part thereof, and optionally
 - (b) a pharmaceutically acceptable carrier and/or diluent.
- 4. The pharmaceutical composition according to any one of claims 1 to 3 characterized in that the polynucleotide is a DNA oligonucleotide.
- The pharmaceutical composition according to claim 4 characterized in that the DNA oligonucleotide is single stranded.
- 6. The pharmaceutical composition according to any one of claims 1-5 characterized in that the polynucleotide comprises 5-40 nucleotides.

- 7. The pharmaceutical composition according to claim 6 characterized in that the polynucleotide comprises 15-25 nucleotides.
- 8. The pharmaceutical composition according to any one of claims 1-7 characterized in that the polynucleotide comprises the sequence 5'PuPuCGPyC

or a non-toxic derivative thereof.

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- 9. A pharmaceutical composition according to any one of claims 1 to 9 wherein said binding site is or is derived from a eukaryotic binding site.
- 10. The pharmaceutical composition according to claim 9 wherein said eukaryotic binding site is a binding site for a cytokine.
- 11. The pharmaceutical composition according to any one of claims 2 to 10 wherein said part is a motif of a transcription factor binding site or a complementary sequence thereof.
- 12. The method of any one of claims 2 to 11 wherein said part comprises at least 7 nucleotides.
- 13. The pharmaceutical composition according to any one of claims 1 to 12 characterized in that the polynucleotide comprises at least one phosphorothicate linkage.
- 14. The pharmaceutical composition according to any one of the preceding claims 1 to 3, characterized in that it comprises a further adjuvant.
- 15. The pharmaceutical composition according to any one of claims 1 to 11, characterized in that the antigen (b) is selected from the group comprising peptides, polypeptides, proteins, polysaccharides, steroides and tumor cells.

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- 16. The pharmaceutical composition according to any one of claims 1 to 15, characterized in that the composition is a vaccine.
- 17. The pharmaceutical composition according to claim 16 characterized in that the vaccine is used for the treatment of cancer.
- 18. The pharmaceutical composition according to claim 16 characterized in that the vaccine is used for the prophylaxis and/or treatment of pathogen microorganisms.
- 19. Use of an oligonucleotide or a polynucleotide as defined in any of the preceding claims for the preparation of a pharmaceutical composition for the modulation, enhancement or suppression of an immune response.
- 20. Use according to claim 19 wherein the modulation, suppression or enhancement is the result of a vaccination.
- 21. Use according to claim 19 wherein the modulation, suppression or enhancement is selected from the group break of tolerance, regulation of TH1/TH2 helper cell responses, switch of lg classes, treatment of autoimmune responses and induction of tolerances.
- 22. Use of an oligonucleotide or a polynucleotide as defined in any of the preceding claims as an immune adjuvant.
- 23. A method for the identification of a nucleic acid sequence useful as an enhancer, modulator or suppressor of an immune response comprising
 - (a) testing a nucleic acid molecule comprising a putative binding site of a transcription factor for toxicity;

- (b) modifying the nucleic acid sequence of said putative binding site comprised in said nucleic acid molecule which has proven toxic in step (a); and
- (c) repeating steps (a) and (b) one ore more times until a non-toxic nucleic acid molecule has been identified.